Rearray Manager

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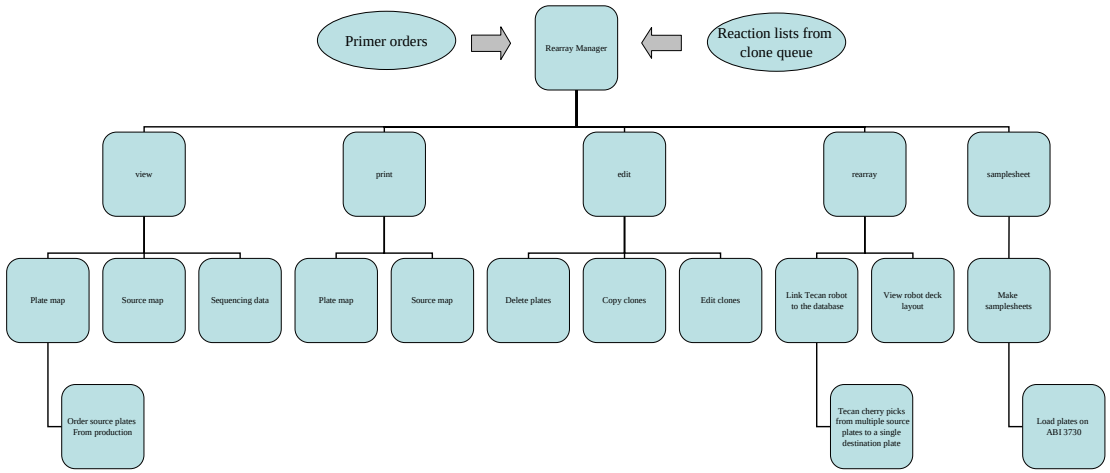
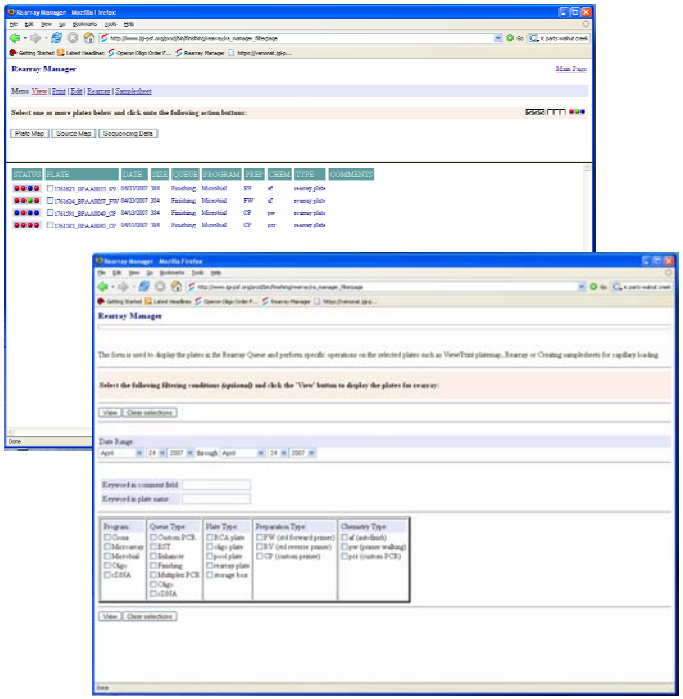
The Rearray Manager is a web-based software application designed at the Joint Genome Institute for microbial finishing. The Rearray Manager allows us to track primers and reaction plates by name, date, library, or reaction type.
One of the most critical functions of the Rearray Manager is its interaction with the Tecan robot. Our Tecan machines have been programmed to cherry pick from multiple source plates into a single destination plate. This is very important to our group because as finishers often we only need a handful of clones from a 384 well plate. The Rearray Manager tells the Tecan which wells to pick from and dispense into and dictates the deck layout.
The Rearray Manager is intergraded with consed so primers and reaction lists are automatically generated. Alternatively, such lists can be entered manually. The Rearray Manager organizes clones first by library, then by clone number unless you indicate otherwise. This flexibility in sorting is extremely useful when there are multiple libraries combined in one plate.
From the Rearray Manager one can also look up plates (primer plates or reaction plates), check on the status of plates, edit or delete plates, and make sample sheets so plates can be loaded onto an ABI 3730. Finishing plates and their source plates can be visualized in 384 or 96 well format. Rearray Manager also generates a list of source plates which is essential to ordering necessary source plates from production storage. Use of the Rearray Manager allows us to effectively perform lab experiments for a large amount of projects.

OVERVIEW OF REARRAY MANAGER





The lower screenshot shows the home page for the Rearray Manager. Searches can be narrowed by several factors but we primarily search by date and plate or library name.

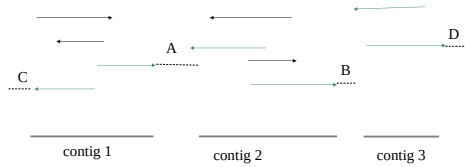
The top screenshot is an example of a search by library and date. The bullets in the status bar are for Oligo2 rearray, Oligo1 rearray, DNA template rearray, samplesheet creation respectively. Red indicates an uncompleted task, green indicates the task is in progress, and blue indicates a completed task.

Although the Tecan can be programmed for many different functions we use the Tecan to pick from multiple source plate into a single destination plate. Plates are placed on the deck in a specific order based on plate name and number. The eight needles pick clones or primers and put them in the appropriate well in the destination plate. In between picking each set of eight samples the needles are rinsed with water and 2% bleach to prevent contamination.

How Does Rearry Manager fit into the finishing process?

Reactions are picked in consed and once primer orders are sent to vendors the reaction lists and the primers get added to the Rearray Manager system. This needs to happen so Tecan can cherry pick primers and glycerol stocks. Once the glycerol stocks have been picked they are grown overnight, then they go through RCA, sequencing chemistry and BET cleanup. Now the plate are ready to be sequenced. Samplesheets are made by the Rearray Manager so the plate can be loaded on an ABI 3730. Once the reactions finish the data is added to a project using consed. More reactions are picked and the cycle repeats itself until the project is closed, meaning no more gaps, and polished, meaning it meets our quality standards. At this point projects are handed over for quality control/quality assurance.

The diagram below shows how clones are picked. We would pick the clones shown in green because they either close gaps (gap A between contigs 1 and 2 and gap B between contigs 2 and 3) or because they will extend the sequence from the ends of the scaffold (C and D).



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